

THE CLAIMS:

1. (Currently Amended) A packet-based wireless communication system for communicating with a mobile node, comprising:

a virtual private network having a security gateway and a home agent, wherein said mobile node is connected to a foreign network and information packets are transmitted to the mobile node from the virtual private network, and wherein said security gateway on the virtual private network is connected to said home agent, said security gateway having an inner tunnel address for routing packets within the virtual private network; and

a correspondence node located on the virtual private network and coupled to said home agent on the virtual private network, wherein an information packet transmitted from the correspondence node is encapsulated by the home agent, [[before]] said encapsulated information packet is transmitted [[forwarding]] to the security gateway using the inner tunnel address and said security gateway transmits the encapsulated information packet [[for forwarding]] to the mobile node.

2. (Original) The packet-based wireless communication system for communicating with a mobile node of Claim 1 wherein the security gateway encrypts the information packet.

3. (Original) The packet-based wireless communication system for communicating with a mobile node of Claim 1 wherein the security gateway further encapsulates the information packet.
4. (Original) The packet-based wireless communication system for communicating with a mobile node of Claim 1 wherein the communication system does not use an external home agent for forwarding the information packet to the mobile node.
5. (Original) The packet-based wireless communication system for communicating with a mobile node of Claim 1 wherein the information packet includes an address for the security gateway.
6. (Currently Amended) The packet-based wireless communication system for communicating with a mobile node of Claim 1 wherein the information packet includes a virtual private network inner tunnel [[inner]] address.
7. (Original) The packet-based wireless communication system for communicating with a mobile node of Claim 1 wherein the security gateway transmits the information packet to the home agent to forward outside the virtual private network to the mobile node.

8. (Currently Amended) A wireless communication system utilizing an information packet transmitted in a packet-based communication, comprising:

a foreign network coupled to a mobile node associated with a virtual private network and having a public home address;

a virtual private network gateway receiving information packets entering and leaving the virtual private network, with a virtual private network tunnel inner address used for routing packets to the virtual private network gateway transmitted from nodes within the virtual private network and a virtual private network gateway address used for routing [[to route]] packets [[transmitted]] to the virtual private network gateway transmitted from at least one mobile node located [[nodes]] outside the virtual private network on a foreign network;

the mobile node location on the foreign network is designated by a care-of address; and

the virtual private network tunnel inner address and virtual private network gateway address being [[addresses]] sufficient for tunneling information packets to [into, outside,] and within said [[a]] virtual private network, [[to and from the associated mobile node using a single home agent.]]

9. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the information packet is forwarded outside the virtual private network from the virtual private network gateway using the care-of address for the mobile node.
10. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the information packet is forwarded outside the virtual private network from a home agent located on the virtual private network using the care-of address for the mobile node.
11. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the virtual private network gateway encrypts the information packet prior to transmitting the information packet from the virtual private network ~~[[transmission]]~~ to the mobile node.
12. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the home agent appends the virtual private network tunnel inner address to the information packet to route the information packet to the ~~[[virtual private network gateway inside the]]~~ virtual private network.

13. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the virtual private network gateway appends the care-of address to the information packet prior to transmitting the information packet from the virtual private network to the mobile node.

14. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the home agent appends the care-of address to the information packet prior to transmitting the information packet from the virtual private network to the mobile node.

15. (Currently Amended) The wireless communication system utilizing an information packet transmitted in a packet-based communication of Claim 8, wherein the virtual private network gateway appends the virtual private network gateway address to the information packet for routing the information packet [[packets]] to the virtual private network gateway.

16. (Currently Amended) A method for packet-based communication to a mobile node from a correspondence node on a virtual private network, comprising the steps of:

providing a virtual private network associated with a mobile node connected to a foreign network;

providing a security gateway located on the virtual private network and connected to the [[a]] home agent and the [[a]] correspondence node connected to said foreign network, said security gateway [[in the]] on the virtual private network being designated with a gateway address for routing information [[to route]] packets to [[from outside]] the virtual private network [[to the security gateway]] and having an inner tunnel address for routing information packets within the virtual private network;

forming an information packet a correspondence node on the virtual private network for transmission to the mobile node;

transmitting the information packet to the security gateway using said [[a]] inner tunnel [[inner]] address to route said information packet^{[[s]]} within the virtual private network to the security gateway;

encapsulating the information packet at the security gateway; and

forwarding the information packet to the mobile node without using an external home agent.

17. (Currently Amended) The method for packet-based communication to a mobile node from a correspondence node on a virtual private network of Claim 16, further comprising the step of:

encrypting [[an encapsulated]] said information packet at the security gateway prior to transmitting said packet [[forward]] to the mobile node.

18. (Currently Amended) The method for packet-based communication to a mobile node from a correspondence node on a virtual private network of Claim 16, further comprising the step of:

encapsulating the information packet at the home agent with the inner tunnel [[inner]] address to allow the correspondence node on [[use within]] the virtual private network to route packets to the security gateway.

19. (Original) The method for packet-based communication to a mobile node from a correspondence node on a virtual private network of Claim 16, further comprising the step of:

transmitting the information packet out of the virtual private network from the home agent.

20. (Original) The method for packet-based communication to a mobile node
from a correspondence node on a virtual private network of Claim 16,
further comprising the step of:
transmitting the information packet out of the virtual private
network from the security gateway.